

U.S. Antarctic Marine Living Resources Program

2013/2014 Weekly Field Reports

Cape Shirreff, Livingston Island

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Science Report

Seabirds

1. It is approximately two weeks since peak hatch for both gentoos and chinstraps. To date, of the 50 gentoo reproductive success study nests, 44% are brooding two chicks, 26% are brooding one chick, and 30% have failed. Breeding success of the 100 chinstrap reproductive study nests have 37% brooding two chicks, 38% brooding one chick, while 25% have failed. The increase in the failure rate this week is mainly due to infertile eggs.
2. We continue to monitor known-age penguins. Of the 42 gentoo penguin nests monitored, 19% are brooding two chicks, 50% are brooding one chick and 31% have failed. Of the 39 known-aged chinstraps that are monitored 35.9% are brooding two chicks, 41% are brooding one chick and 23.1% have failed.
3. We deployed radio transmitters on chinstrap penguins this past week to measure foraging trip durations during the chick-provisioning period, and we are still in the middle of deploying them on the gentoo penguins.
4. This past week we deployed bio-logging instruments on penguins that are brooding chicks. Five satellite transmitters (PTTs) and three time-depth recorders (TDRs) were deployed on chinstrap penguins, and five PTTs and two TDRs on gentoos. The satellite transmitters will be used to determine where the penguins forage and the time-depth recorders give profiles of diving behavior. We will recover these instruments after one week of deployment.
5. We began our diet sampling of penguins with gentoo penguin diets initiated on 6 January and chinstrap penguin sampling on 11 January. For each sampling day, we collected samples using the wet offloading technique from five nesting penguins after they returned from foraging trips. These samples have consisted entirely of Antarctic krill (*Euphausia superba*) for the chinstraps and a mix of fish and Antarctic krill for the gentoo penguins. We recorded total mass of stomach contents, diet composition, and length and sex frequency of krill for each sample. We also extract and saved all otoliths we find from the samples.



6. We continue to monitor 21 brown skua territories regularly and one territory opportunistically when we are able to make the trek over to the far south west side of Cape Shirreff. Currently, we do not know the status of that nest. However, of the 21 territories that are regularly monitored, nine pairs are brooding chicks, three are still brooding eggs, and nine have failed. The increase in failed nests, many of which had newly hatched chicks, may be a result of several recent days of wet weather and high winds.

Pinnipeds

7. This week we have not recovered any additional GPS/Time depth recorders from females instrumented during their perinatal periods.
8. Thirteen of our 30 CCAMLR attendance females have completed six trips to sea. Two of our attendance females have lost their pups, most likely due to leopard seal predation.
9. Trip durations continue to be shorter than last year. All 28 remaining attendance study females have completed at least four trips to sea, seven have yet to complete five trips.
10. Ten of the pups of the thirteen females that have completed six trips to sea have been weighed according to protocol. Mean mass gain from the start of female foraging cycles to completion of the sixth trip suckling bout is 147.5 g/d (n=10 s.d. 30.0; range:147.5 to 195.4) for all pups.
11. We continue to collect DNA from pups of tagged females. To date, of the 91 tagged females with pups on our study beaches, we have collected 80 DNA samples. Now it is a race against the leopard seals to collect the pup DNA before the pups are depredated. We are also making regular rounds to beaches off of our study area to locate and collect DNA from the pups of wayward study females.
12. We continue to monitor our adult tagged female population and mother pup pairs to get a measure of reproductive success and loss of pups due to leopard seal predation. Pups have begun entering the water and spend considerable amounts of time now playing in shallow water making them easily accessible to leopard seals. We estimate that 14% of pups have been lost to leopard seal predation thus far.
13. On the evening of 10 January we observed a juvenile male fur seal with a GLS tag that was deployed in the 2011-12 season. The following morning we searched the area and the surrounding beaches with no luck. We remain on a heightened alert status as we canvas the cape looking for this animal. The rapid response seal capture kit has been prepped and is ready to deploy at a moment's notice.



14. This week we collected our fourth fur seal diet sample of ten scats. To date 40 scats have been collected and 33 scats have been processed. Krill has been represented in all of the samples, fish remains have been found in three samples, and squid in only one.
15. On 10 January we completed our eighth weekly Cape-wide Phocid census.
16. Leopard seals continue to arrive and as of 13 January we have recorded 102 sightings of 18 tagged seals. We have recorded an additional 11 sightings of untagged or otherwise unidentified seals. We have deployed new ID tags on four new animals this year.
17. In an effort to describe leopard seal foraging behavior and quantify their impact on Antarctic fur seals and brush-tailed penguins, we will be deploying animal borne video instruments (CRITTERCAM developed by National Geographic's Remote Imaging group) along with highly accurate GPS surface location instruments on adult leopard seals. To date, we have successfully performed three leopard seal captures on two animals. We have deployed two GPS systems, but no CRITTERCAMS yet.
18. This week had us back in the air again with our APH-22 hexacopter. Over the course of two days we obtained aerial coverage of two leopard seals post capture. These images will be used in a study to estimate mass and assess nutritive condition for leopard seals as well as assess the performance of a new 20 mm lens. In all, 130 images were taken.

Weather

19. This week brought some cold and snowy weather back. The average temperature was -0.1°C with a high of 2.8°C and a low of -1.9°C . Most winds this week were easterlies with an average speed of 12.1 mph with a maximum wind speed of 37 mph. We had our highest precipitation for the season this week at 0.15 inches. Sunrise is now at 3:38 am and sunset is at 10:33 pm.

Camp

20. Very early in the morning of January 9 the Chilean ship *Lautaro* arrived to Cape Shirreff and dropped off three passengers along with food, science and fuel supplies. The AMLR crew was happy to help where we could, bringing gear up the beach, particularly with the fuel.



21. Then there were 10. The very next morning the National Geographic M/V *Explorer* arrived to Cape Shirreff and dropped off our collaborator Kyler Abernathy, Director of Research for the National Geographic Crittercam team. The entire ~ 1 nautical mile span between the ship and shore was full of humpback whales displaying flukes and lunge feeding. Special thanks to the crew of the M/V *Explorer* who navigated inshore to drop off Kyler!
22. This week our new set of door covers (9) was brought up to the main camp from the boat beach, and a new bolt system for mounting them to the buildings was installed.
23. For the first time this year we were able to harvest some fresh drinking water from our rain collection system. It is comforting after drawing from our storage for over two months to finally be adding back to the supply. Additionally, all water barrels were scrubbed and cleaned to reduce algal growth and remove settled dust and dirt.
24. We continue to reclaim more deck space from the ice and snow, and this week the entire front deck, along with passages on the south side of the buildings were opened up.

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